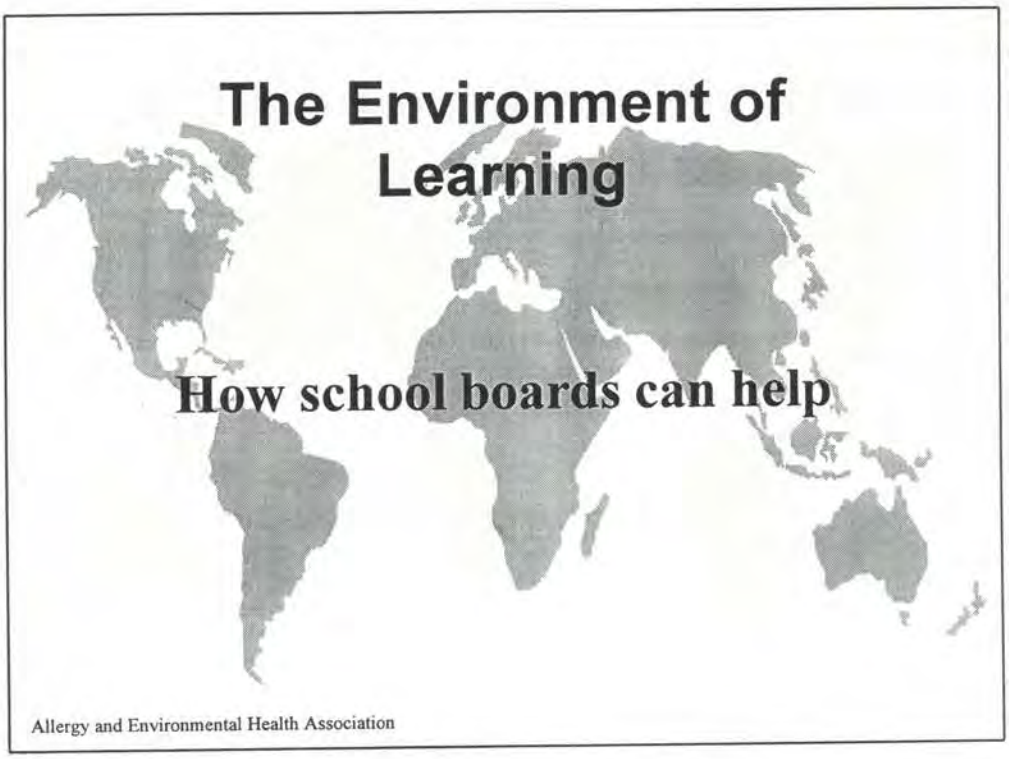
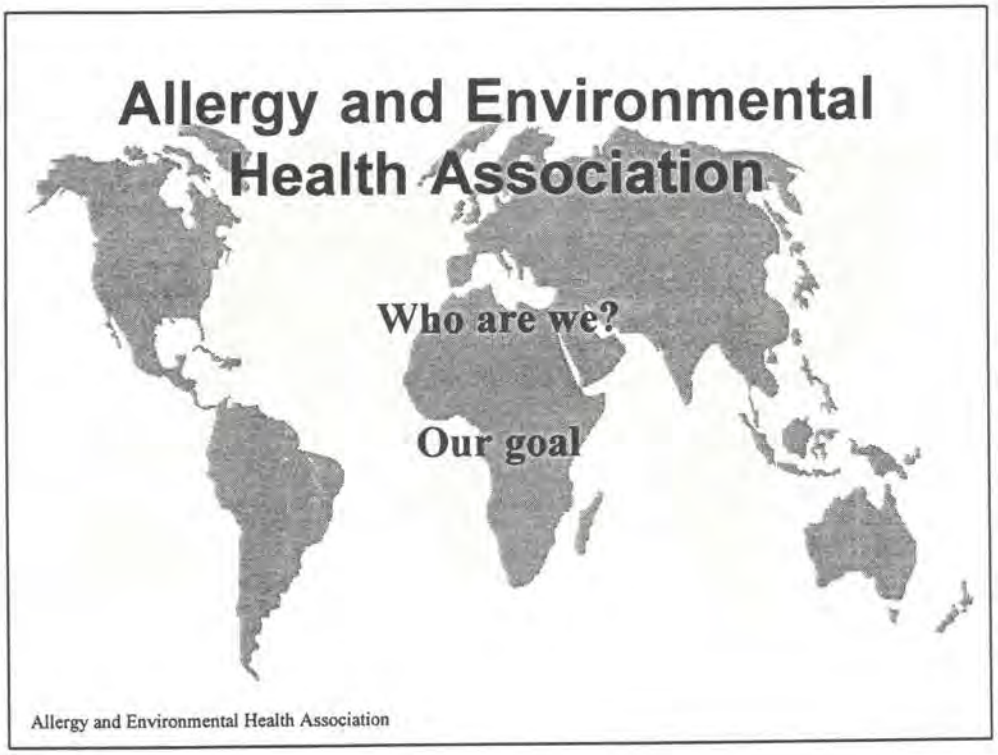
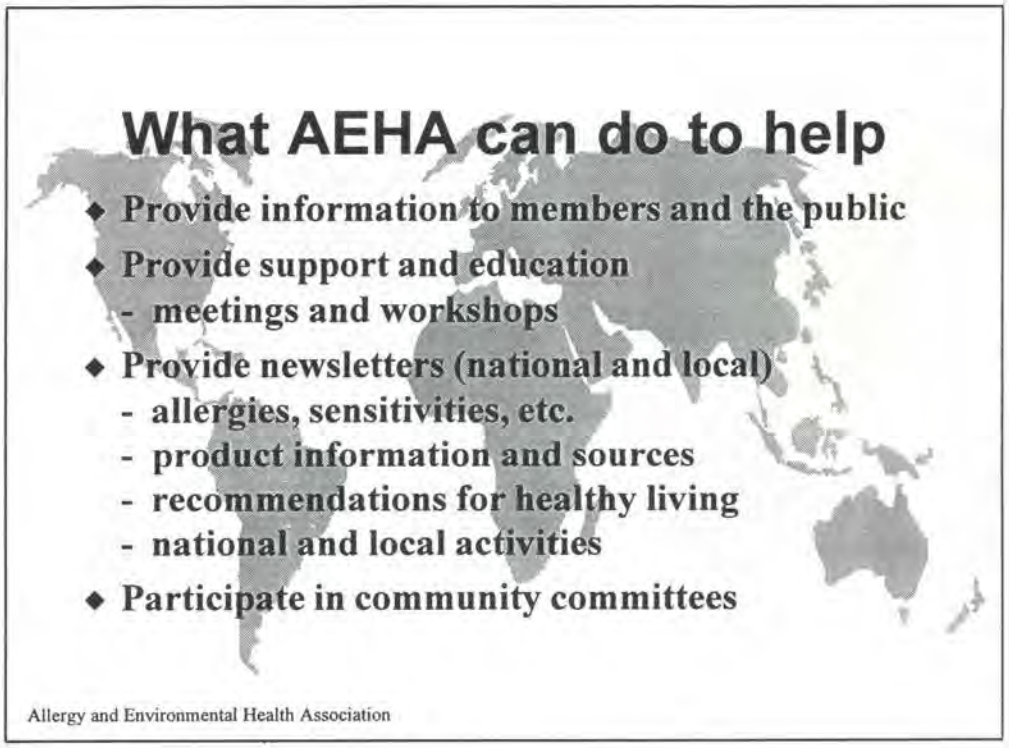


We are pleased (to have been invited) to present the needs of students and staff, particularly those with environmental sensitivities, for better indoor environments in schools.



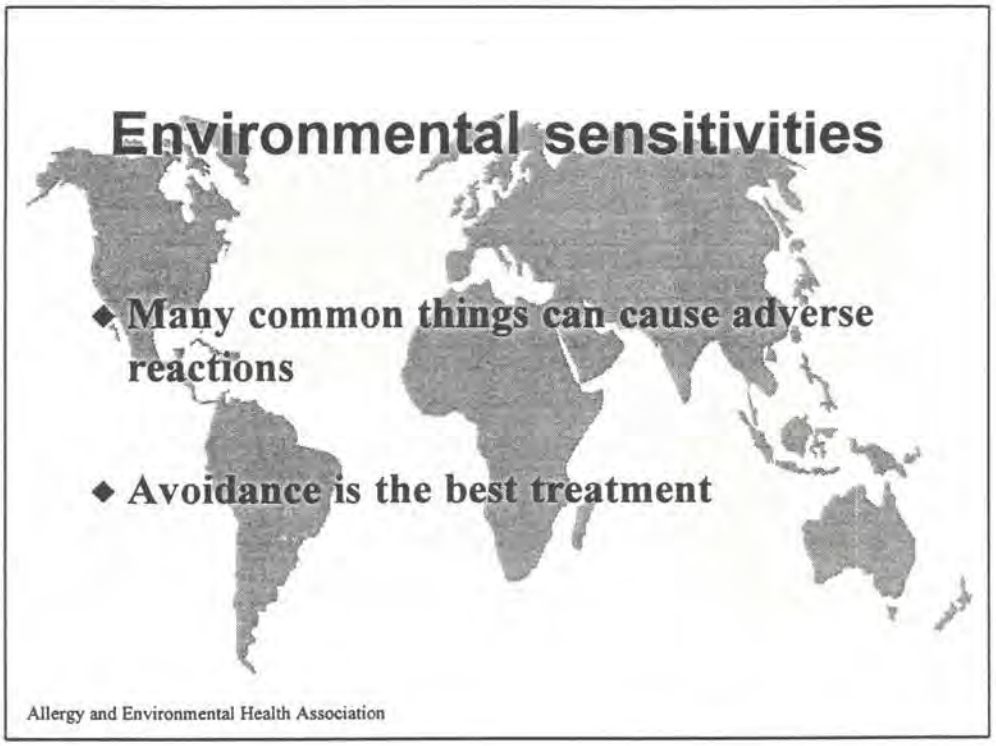
The Allergy and Environmental Health Association is a national, registered charity, operated by volunteers, with branches across Canada, whose members are mainly persons with environmental sensitivities.

Our goal is to improve school environments. The quality of indoor environments is a crucial issue for persons with environmental sensitivities. It is hoped that sharing what works for us will help provide school boards with strategies to improve environments for all students and staff.


What AEHA can do to help
Provide information to members and the public
Provide support and education
- meetings and workshops
Provide newsletters (national and local)
- allergies, sensitivities, etc.
- product information and sources
- recommendations for healthy living
- national and local activities
Participate in community committees
Allergy and Environmental Health Association

AEHA

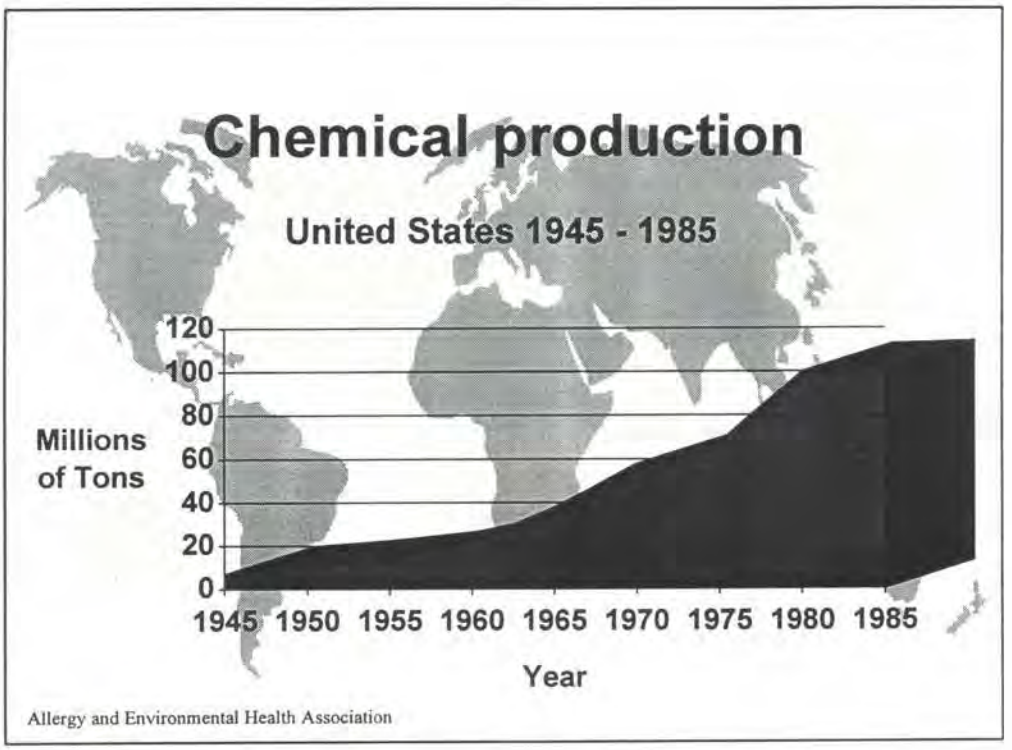
- Provides information on sources of appropriate food, water, clothing, furnishings, building materials, personal care, home, school and office products.
- Brings individuals together for mutual support and education.
- Publishes a national newsletter and branch newsletters with information on:
  - allergies, environmental sensitivities and related health issues;
  - recommendations for healthier living;
  - environmental concerns.
- Promotes public awareness among individuals, communities, schools, corporations and governments of environmental conditions that may be harmful to human health, through printed materials; inservice presentations and workshops; and participation on various related committees, such as Special Education Advisory, Environment and Indoor Air Quality.


Environmental sensitivities
◆ Many common things can cause adverse reactions
◆ Avoidance is the best treatment
Allergy and Environmental Health Association

Environmental sensitivities occur when some individuals become unable to tolerate exposure to substances in their everyday surroundings or environment.

The United States National Academy of Sciences recognizes that at least 15% of our population experiences problems related to environmental sensitivities, such as allergies, asthma, multiple chemical sensitivities, etc. It is also estimated that at least 80% of Canadians have been sensitized to at least one substance.

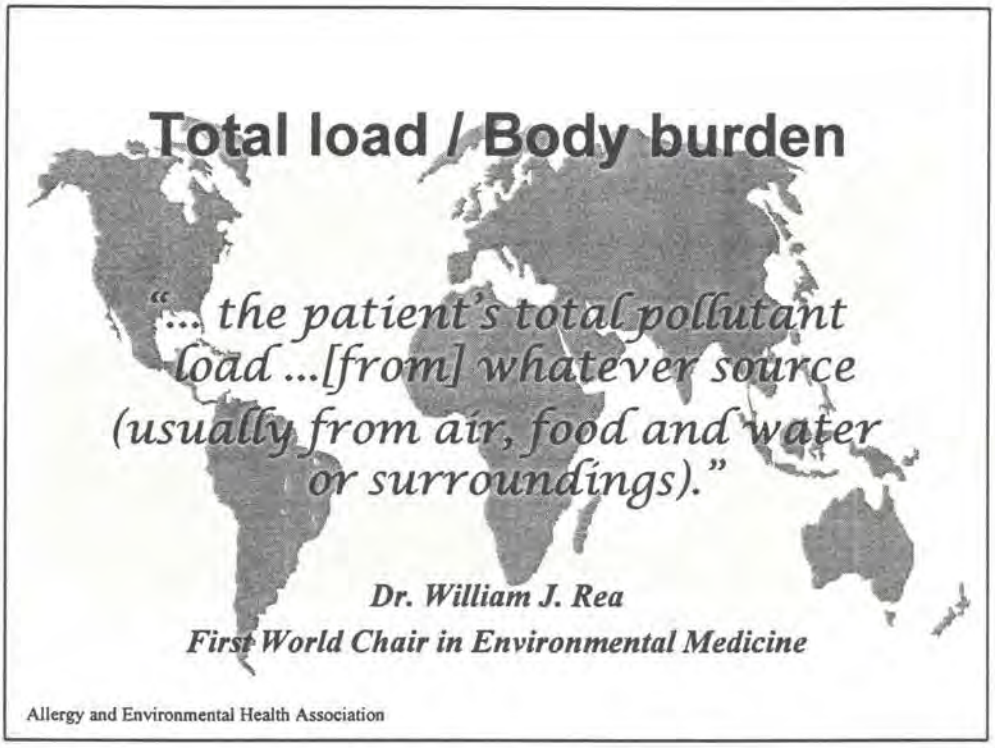
Avoidance reduces the incidence, severity and worsening of the condition.



Chemical Production

The data for this graph was taken from Ashford and Miller's *Chemical Exposures: Low Levels and High Stakes.* The graph illustrates the increase in the production of chemicals in the United States from 1945 to 1985.

People can make a difference by refusing to support the increase in chemical production. If we do not buy or use these products, thus reducing demand, companies will have to reduce their production or reformulate their products.

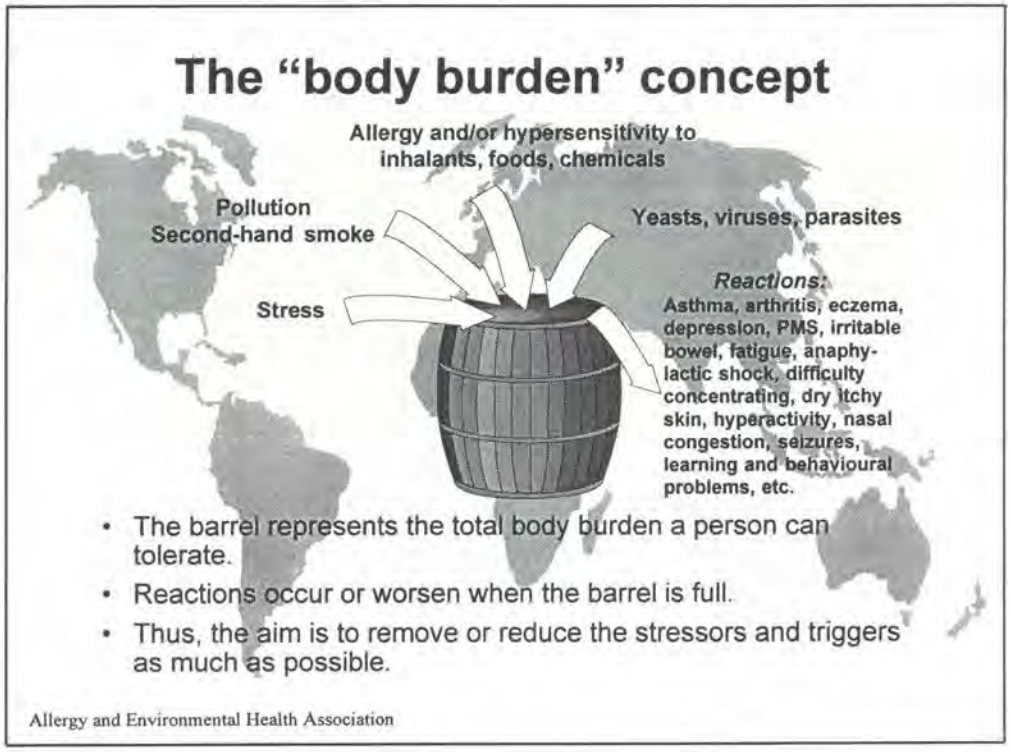

Total load / Body burden
"... the patient's total pollutant load ...[from] whatever source (usually from air, food and water or surroundings)."
Dr. William J. Rea
First World Chair in Environmental Medicine
Allergy and Environmental Health Association

The total load concept

Dr. William J. Rea, the first World Chair in Environmental Medicine (Robbins Institute, University of Surrey, UK), defines total load or body burden as:

> "... the patient's total pollutant load ...[from] whatever source (usually from air, food and water or surroundings)."

A person's recent or concurrent exposures however minute may trigger reactions ranging from mild to severe and can be disabling or life threatening.


The "body burden" concept
Allergy and/or hypersensitivity to inhalants, foods, chemicals
Pollution
Second-hand smoke
Yeasts, viruses, parasites
Stress
Reactions:
Asthma, arthritis, eczema, depression, PMS, irritable bowel, fatigue, anaphy-lactic shock, difficulty concentrating, dry itchy skin, hyperactivity, nasal congestion, seizures, learning and behavioural problems, etc.
• The barrel represents the total body burden a person can tolerate.
• Reactions occur or worsen when the barrel is full.
• Thus, the aim is to remove or reduce the stressors and triggers as much as possible.
Allergy and Environmental Health Association

The sources contributing to a person's body burden are:

- inhalants, foods and chemicals to which there is a sensitivity;
- stress; pollution; second-hand smoke;
- fungi (yeasts and molds), viruses and parasites.

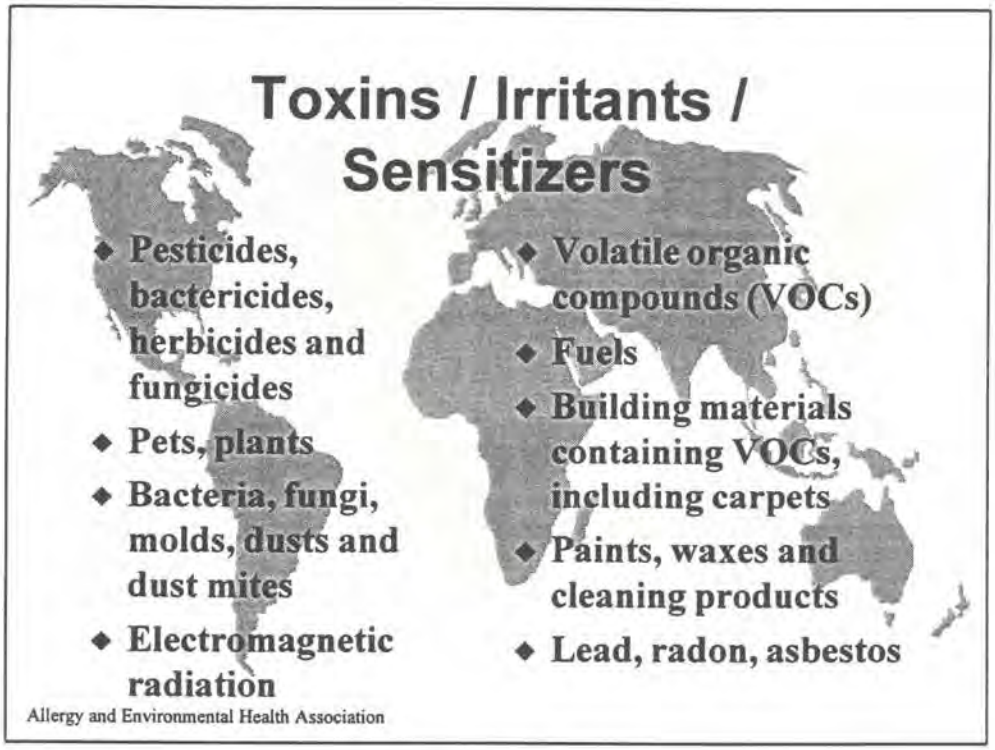
Exposure to environmental agents can induce or mediate the following conditions:

- environmental sensitivities, allergies;
- asthma, arthritis, eczema, depression, PMS;
- irritable bowel syndrome, fatigue, anaphylactic shock.

Signs you can observe and symptoms the affected person can report may include:

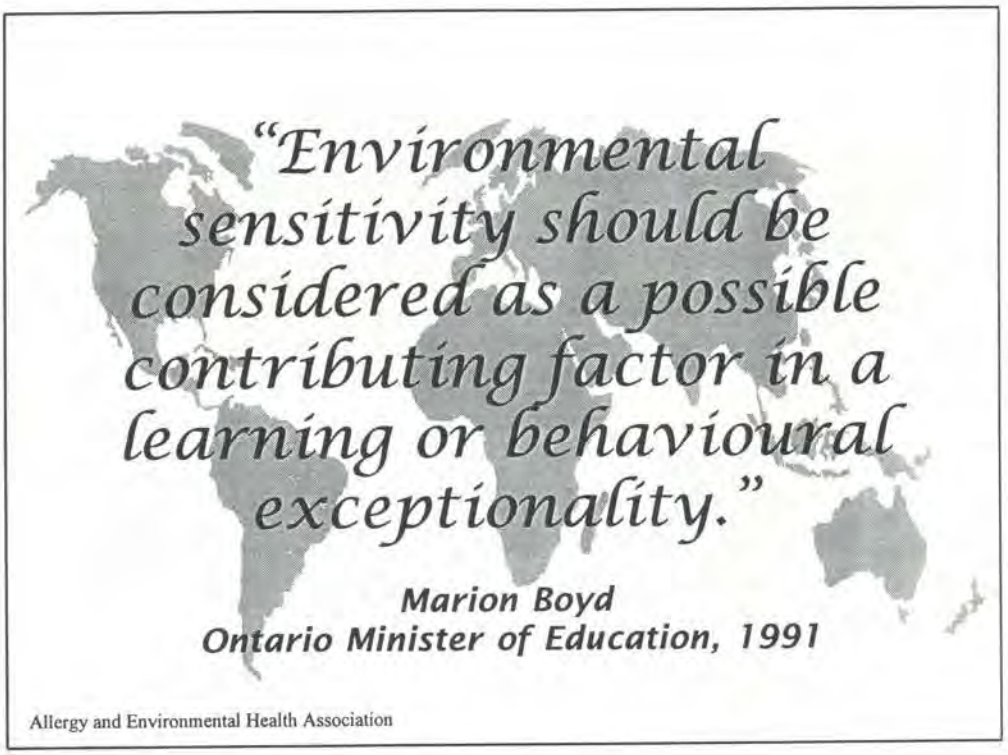
- difficulty concentrating, dry itchy skin, hyperactivity,
- nasal congestion, seizures, behavioural problems, etc.

The barrel represents the total body burden a person can tolerate. Reactions occur or worsen when the barrel is full. Thus, the aim is to remove or reduce the stressors and triggers as much as possible.


Toxins / Irritants / Sensitizers
Pesticides, bactericides, herbicides and fungicides
Pets, plants
Bacteria, fungi, molds, dusts and dust mites
Electromagnetic radiation
Volatile organic compounds (VOCs)
Fuels
Building materials containing VOCs, including carpets
Paints, waxes and cleaning products
Lead, radon, asbestos
Allergy and Environmental Health Association

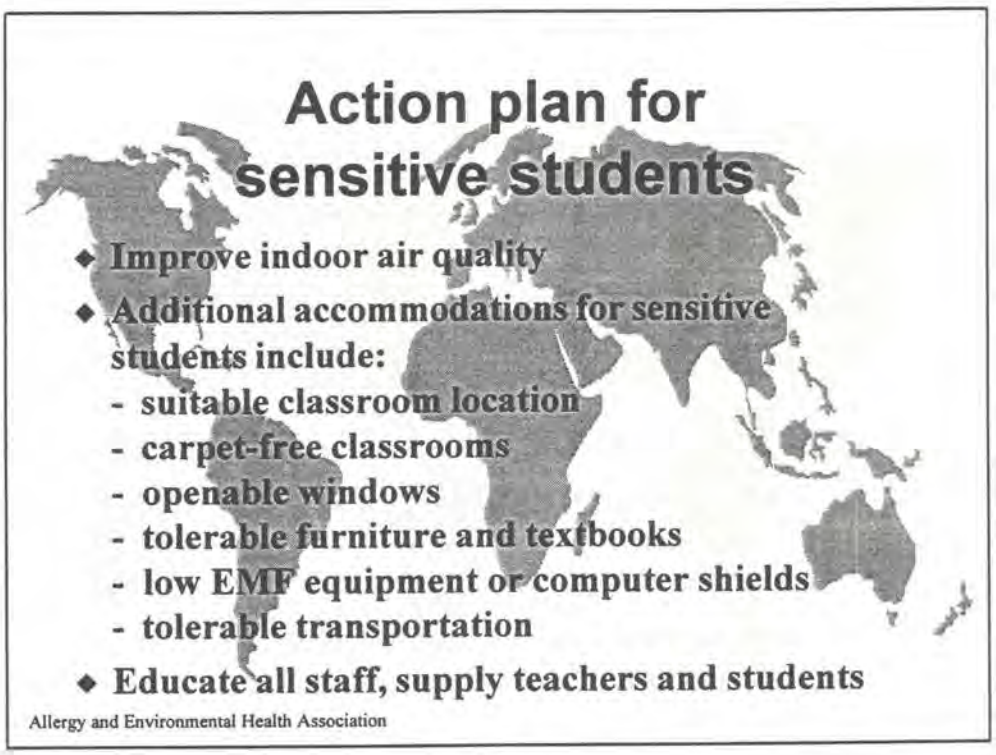
Environmental agents can include:

- Biocides, for example, pesticides, bactericides, herbicides and fungicides;
- Products containing volatile organic compounds (i.e., solvents) including recently dry-cleaned or smoke-laden clothing, many craft supplies, markers, correction fluid;
- Fuels, such as diesel, natural gas, oil, kerosene, wood and propane, for heating and transportation;
- Building materials containing VOCs including carpets and underpadding;
- Paints, waxes and cleaning and maintenance products;
- Pets and plants;
- Living organisms, such as bacteria, fungi, molds and dust mites and their by-products including dust and effluents;
- Hidden toxins, such as lead, radon and asbestos;
- Electromagnetic radiation from power lines, computers, fluorescent lighting and microwave ovens.


"Environmental sensitivity should be considered as a possible contributing factor in a learning or behavioural exceptionality."
Marion Boyd
Ontario Minister of Education, 1991
Allergy and Environmental Health Association

Both former Ontario Ministers of Education **Marion Boyd** and **Tony Silipo** have recommended that the Identification, Placement and Review Committee (IPRC) give consideration to environmental factors.

School boards must establish policies and procedures for accommodating the needs of this growing segment of our population.


Action plan for sensitive students
◆ Improve indoor air quality
◆ Additional accommodations for sensitive students include:
- suitable classroom location
- carpet-free classrooms
- openable windows
- tolerable furniture and textbooks
- low EMF equipment or computer shields
- tolerable transportation
◆ Educate all staff, supply teachers and students
Allergy and Environmental Health Association

School boards can help in many ways.

- General indoor air quality improvements are required and will be covered later in this presentation.
- For students with environmental sensitivities, the following accommodations may be necessary:
  - a classroom within the main school building, that is, not a portable or portapac classroom;
  - a carpet-free classroom;
  - openable windows;
  - furniture and textbooks which have sufficiently off-gassed - usually a minimum of 2 years old, but not so old as to harbour dust and molds;
  - low EMF equipment/shields for computers;
  - specialized transportation in a well-maintained, non-diesel, non-propane, non-natural-gas (i.e., gas) vehicle which is at least 2 years old, with a non-smoking driver.
- Sensitivities are individual; other precautions may be needed, including home instruction provided by the school board.
- It is important to educate all staff about the needs of persons with environmental sensitivities through the provision of publications, inservice presentations, workshops, etc.

We ask you to take action to improve the indoor environments in schools and to accommodate the needs of students and staff with environmental sensitivities.

Maintenance and renovations
◆ Schedule maintenance and renovation projects to minimize exposures
◆ Avoid construction, renovation and maintenance problems
Allergy and Environmental Health Association

- Schedule painting, major maintenance and renovation projects during July, with good ventilation, to minimize student exposure and to facilitate off-gassing. When the school is unoccupied, use a bake-off cycle to facilitate off-gassing by closing up the area, turning up the heat and ventilation rate and then opening the windows and doors to remove toxins.

- Avoid "building in" problems when renovating or building new schools. Use the least toxic building materials in all projects. For example, avoid the use of composite board products, carpets and underpadding. We refer you to CMHC's *Guide to Healthy Building Products* (forthcoming), *The Clean Air Guide* and *Research House for the Environmentally Hypersensitive* for appropriate product information and sources.

Floor coverings
Establish a no-carpeting policy
Use smooth, non-porous and preferably seamless flooring throughout all schools for replacement and new construction projects
Allergy and Environmental Health Association

Floor coverings

- Carpets are a major source of indoor air pollution in our schools.
- New carpets off-gas many toxic chemicals, including formaldehyde for which there is no safe level.
- Carpets act as sinks continually adsorbing and desorbing contaminants.
- Carpets are traps for dust, particles and moisture and become breeding grounds for molds, bacteria and dust mites.
- The best carpet policy is a "no carpet" policy. Ceramic, hardwood, and hard vinyl tiles are better choices.

Most carpets are a major source of indoor air pollution. New carpets, underpads, adhesives, treatments and cleaners off-gas volatile organic compounds (VOCs). If you have noticed a smell or have felt "differently" when in a place with new carpets, it may have been from exposure to the off-gassing of volatile organic compounds.

Carpets have two lives. When new they are a source of volatile organic compounds. As they age, carpets accumulate dirt and moisture from the concrete slabs and student spills; carpets then become breeding grounds for molds, bacteria and mites. Molds are increasingly recognized as important toxicological agents. Carpets are major contaminant sinks or reservoirs.

ZIGGY...
by Tom Wilson
DON'T GET ALL STRESSED OUT...
...TODAY IS THE FIRST DAY OF EVERYBODY'S LIFE!
ACME LINOLEUM COMPANY
JUST SAY "NO" TO RUGS!

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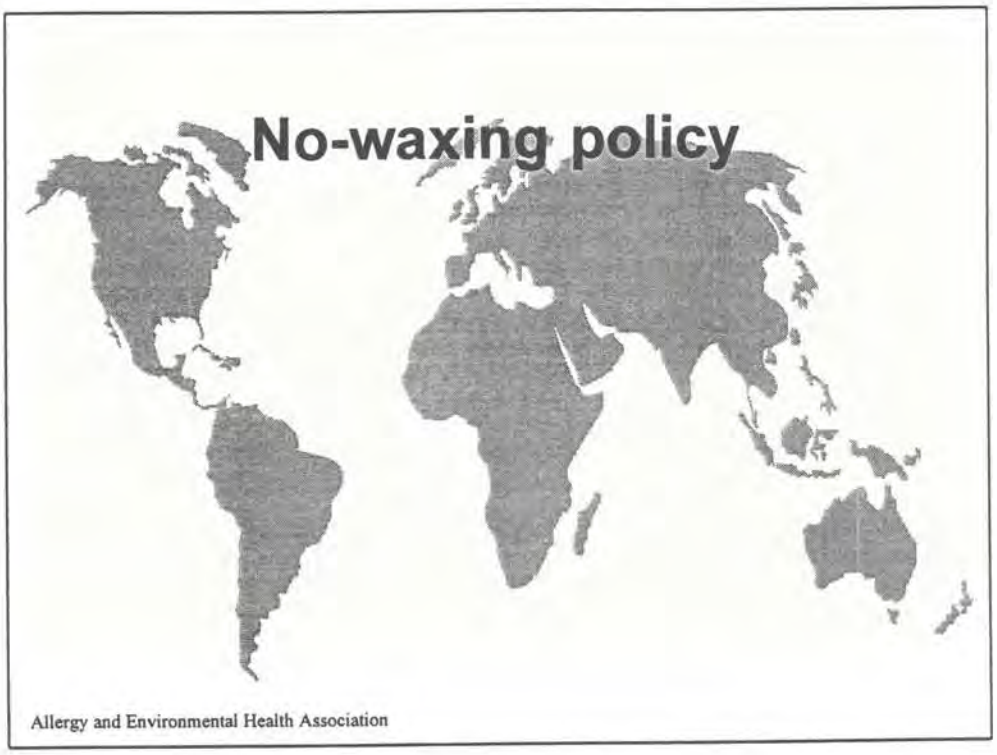
Allergy and Environmental Health Association

Just say no to rugs

This Ziggy cartoon makes reference to society's addiction to carpets.

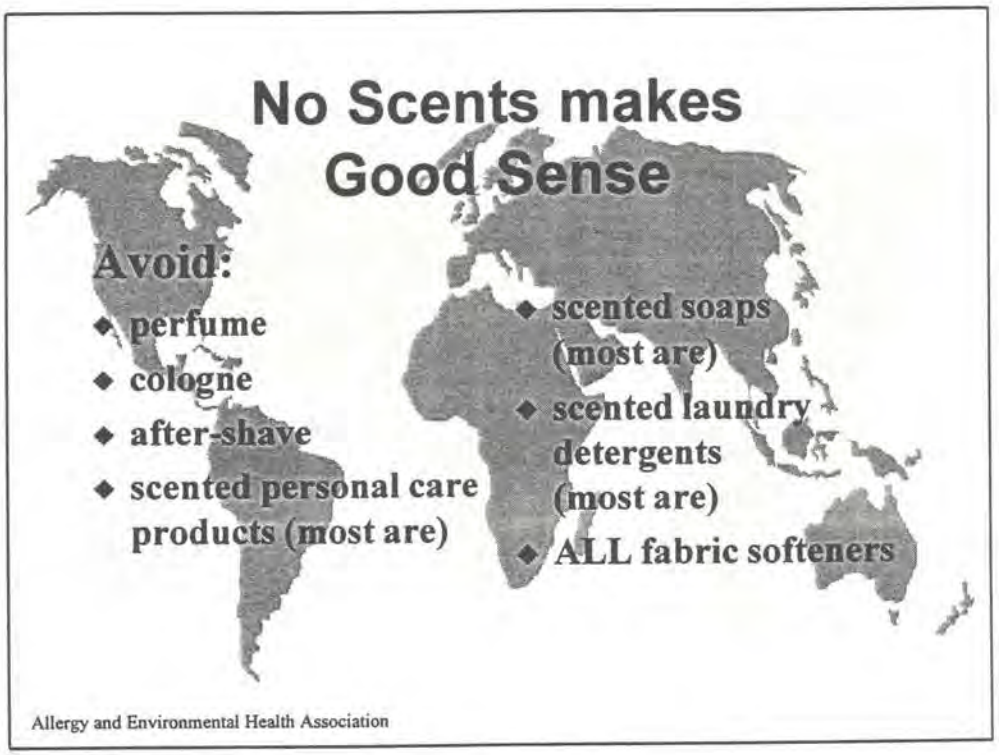


No-waxing policy

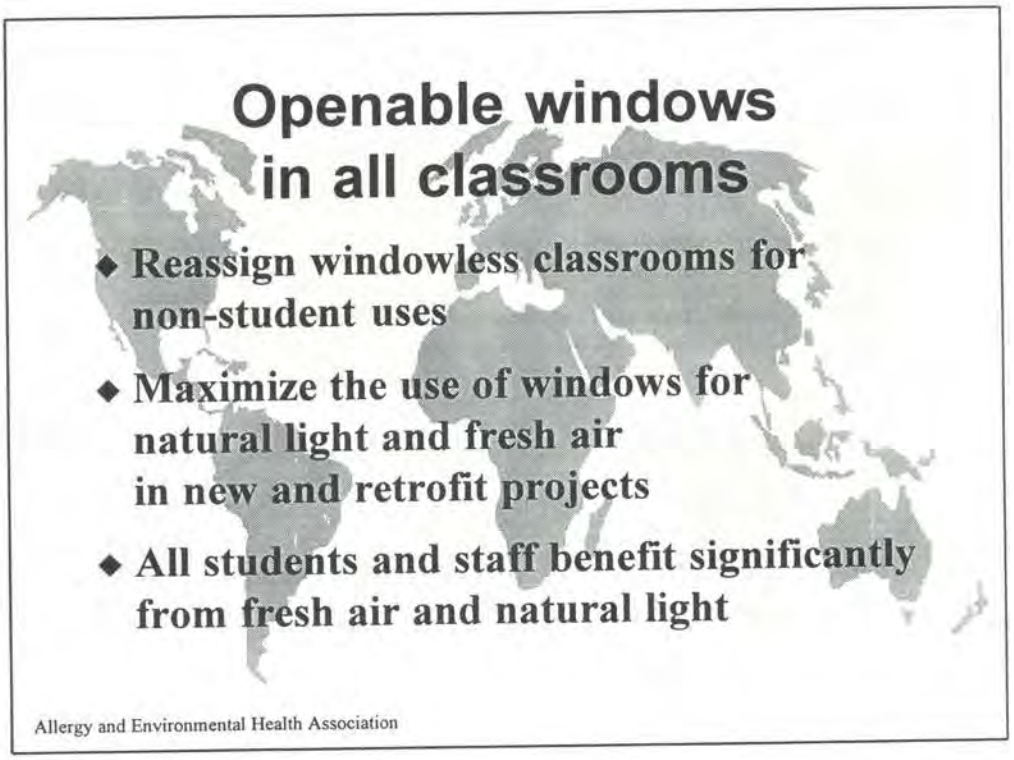
Sealants, waxes, etc., off-gas. Gleaming floors are generally indicators of unhealthy indoor environments. A no-wax school is a healthier school. Re-education should be a priority.

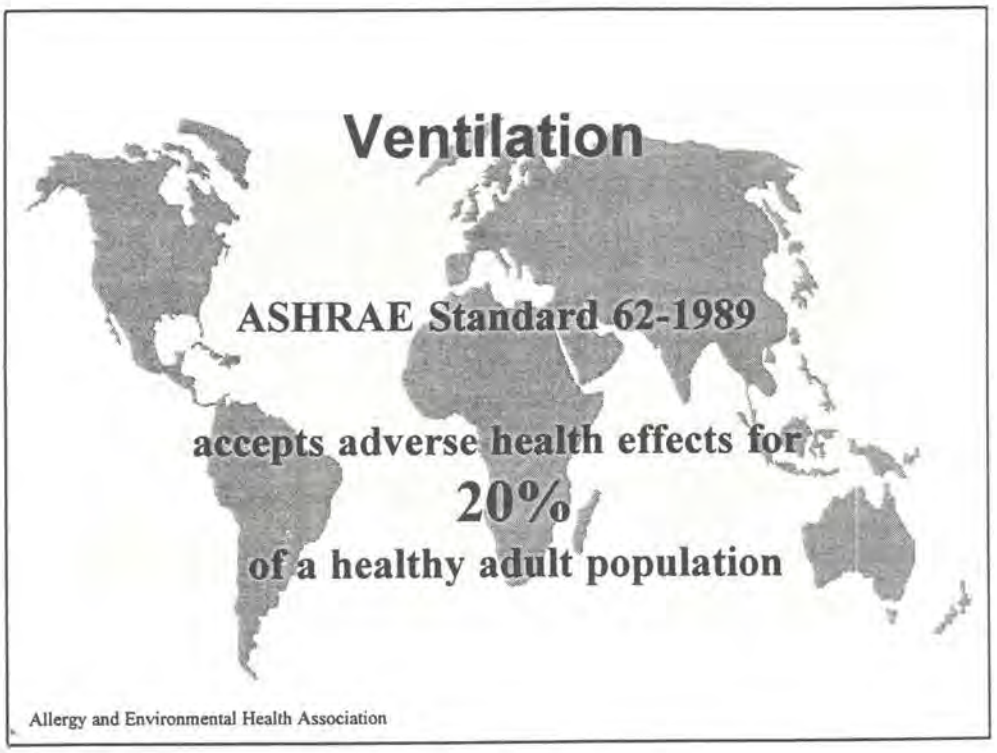
Cleaning and maintenance products
Use unscented, tolerable, non-toxic cleaning and maintenance products, such as baking soda and diluted vinegar
Allergy and Environmental Health Association

- **A policy of using strong cleaners to maintain buildings and remove stains reduces air quality.**
- Eliminate any cleaning product whose Material Safety Data Sheet (MSDS) requires the use of protective equipment, such as safety goggles, rubber gloves, and extra ventilation or which recommends caution with respect to the disposal of the product;
- Use MSDS, health impact priority substance lists and environmental certification lists to help select better products. Learn from school boards, such as Toronto, which has researched this subject;
- Avoid products causing reactions.
- Request a list of alternative products from the Allergy and Environmental Health Association.

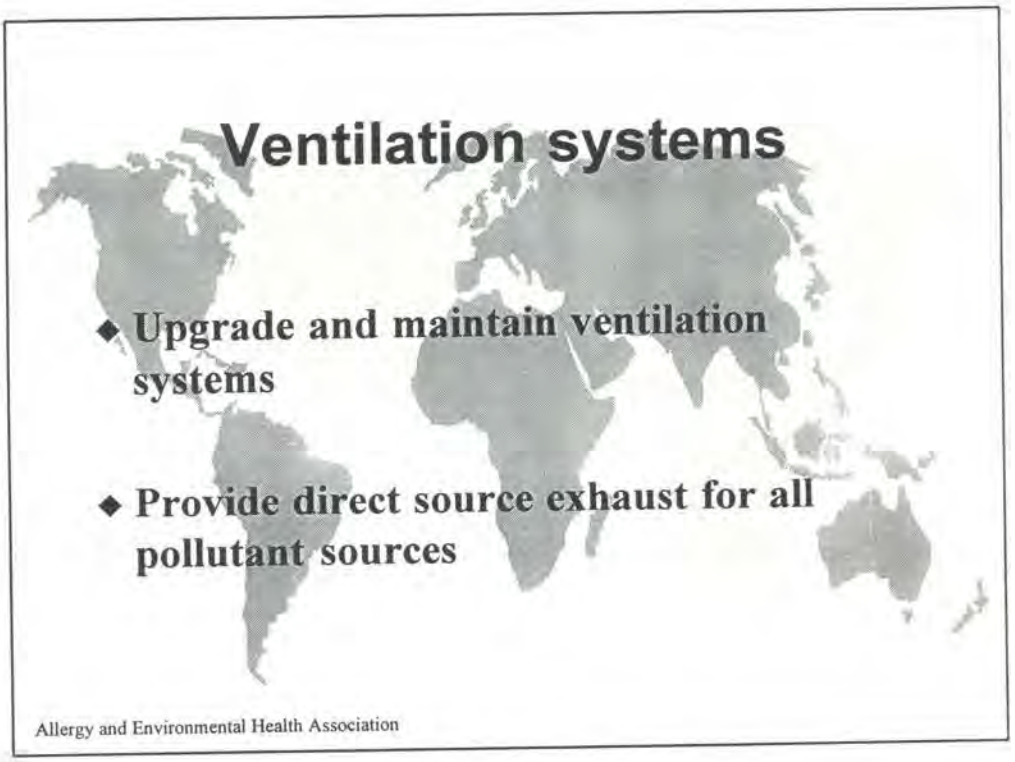


- Establish and post a "no scent" policy on school property. This may involve an education program for students, staff, administration, parents and community groups which make use of the school.
- Specify scent-free and odour-free cleaning and maintenance products to improve air quality, lower exposures, workers' compensation claims and material costs.
- Many products contain VOCs, such as alcohol, and other toxic substances to disperse scents or may contain nerve-deadening agents to interfere with odour detection.

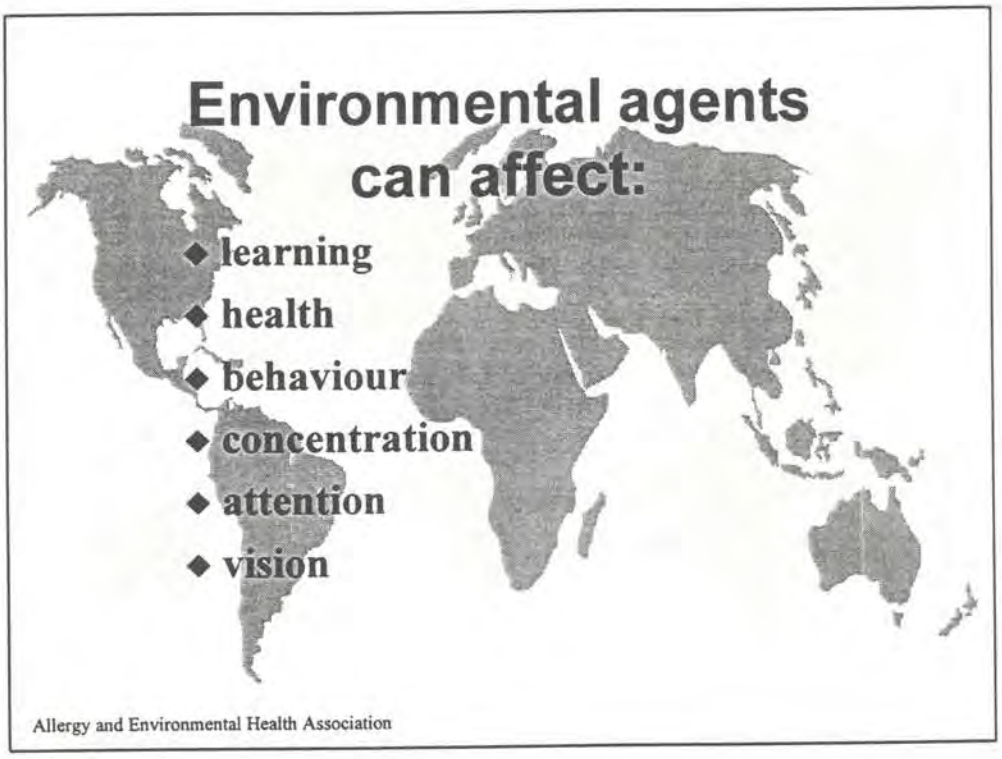

Openable windows
in all classrooms
◆ Reassign windowless classrooms for non-student uses
◆ Maximize the use of windows for natural light and fresh air in new and retrofit projects
◆ All students and staff benefit significantly from fresh air and natural light
Allergy and Environmental Health Association



- The benchmark used to assess indoor air quality in our schools -- ASHRAE Standard 62-1989 -- is based on the premise that it is acceptable for 20 per cent of a HEALTHY, ADULT population to react adversely at the levels set by the standard. Typically, research was done with healthy young adult males.
- No standards have been developed to address the needs of children.
- These standards are clearly inadequate, but especially for children. Children's detoxification systems are far less efficient than those of adults and contaminants tend to be in higher concentrations in a child's breathing zone.


Ventilation systems
◆ Upgrade and maintain ventilation systems
◆ Provide direct source exhaust for all pollutant sources
Allergy and Environmental Health Association

- Upgrade, clean and maintain heating and ventilation systems to satisfy either the most stringent indoor air quality standards or those necessary to meet the needs of sensitive students, whichever is higher.
- Upgrade air intake and air filtration systems. Locate air intakes upwind and away from building exhaust vents, and away from tarred roofs and bus-loading zones. Evaluate materials used in air filtration and ventilation systems to ensure their effectiveness and tolerability.
- Provide direct exhaust for point sources, such as, photocopiers and laminating equipment; chemistry and biology labs; art rooms; computer labs; printers; fax machines; storage rooms; change rooms; cloak rooms; kitchens; washrooms; etc. Heat recovery ventilators can improve energy efficiency.
- Install automatic-closure doors on all rooms containing these contaminants.
- Locate in a controlled wing such problem classrooms as industrial-arts shops, auto shops, science labs and art rooms. These classrooms should be efficiently vapour-sealed, with separate ventilation systems, or preferably, should be located in separate buildings. If school boards insist on using portables perhaps this is how they should be used.



Many agents in the environment can -- and do! -- interfere with attention, behaviour, concentration, health and vision and thus interrupt the learning process.

By working together, educators and parents can make a difference.

Better indoor school environments will improve student health, attentiveness, behaviour, concentration and learning, and thus will assist students in achieving their individual potential. As well, staff health and performance will improve.

Better indoor air quality will help prevent the development and worsening of health problems such as asthma and environmental sensitivities.